REMARKS

We acknowledge receipt of and thank you for the Advisory Action dated January 31, 2002. We will like to further discuss the issues mentioned in the Advisory Action by the Examiner.

In a telephone conversation with Examiner Dougherty on March 26, 2002, it was stated that the rejection of claim 6 under 35 U.S.C. § 103(a) should be over U.S. Patent No. 6,133,671 to Atsuta et al. in view of U.S. Patent No. 5,646,469 to Tsukimoto et al. instead of U.S. Patent No. 5,783,899 to Atsuta et al. in view of U.S. Patent No. 5,646,469 to Tsukimoto et al. Therefore, the following remarks assume that references to the Atsua patent stated in the rejection under 35 U.S.C. § 103(a) beginning on page 3 of the Office Action refer to U.S. Patent No. 6,133,671. A second "corrected" Office Action will not be necessary.

Status Of Application

Claims 1-6 and 17-26 are pending in the application; the status of the claims is as follows:

Claims 19-22 are allowed.

Claims 1, 2, 5, 17, 18, 23, and 24 are rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,133,671 to Atsuta et al. (hereinafter the "Atsuta Patent").

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over the Atsuta Patent in view of U.S. Patent No. 5,646,469 to Tsukimoto et al. (hereinafter the "Tsukimoto Patent").

Claims 3, 4, 25, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Drawings

The indication, in the Office Action, that the drawings filed on December 7, 1999 are accepted, is noted with appreciation.

Claim Amendments

Claim 23 has been amended to more particularly point out and distinctly claim the invention. These changes are not necessitated by the prior art, are unrelated to the patentability of the invention over the prior art, and do not introduce any new matter.

Allowable Subject Matter

The allowance of claims 19-22, by the Examiner, is noted with appreciation.

The objection to claims 3, 4, 25, and 26 as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, is noted with appreciation.

35 U.S.C. § 102 Rejection

The rejection of claims 1, 2, 5, 17, 18, 23, and 24 under 35 U.S.C. § 102 as being anticipated by the Atsuta Patent, is respectfully traversed based on the following.

The Atsuta patent shows a push-pull type driver for a piezoelectric element in a vibration type motor. A first driver (4A) provides a signal A_0 that is provided via coil 6 to provide a driving signal A. A second driver (4A') is provided with an inverted signal by reversing the pull-up and pull-down signals to the driving transistors of the driver. The output of driver 4A' provides a signal A' to the piezoelectric element.

The signals are provided to a multilayer element as shown in figure 4. The electrodes are positioned on piezoelectric elements 15-1 through 15-n as shown in the figure. As stated in column 5, lines 50-54:

> The electrodes on each piezoelectric element portion are separately formed in the four regions to effectively use the driving force produced by the motor. A detailed description of this operation will be omitted. The diagonally opposing *electrodes* are polarized in opposite directions. (*italics* added)

In contrast to the cited prior art, claim 1 includes:

> a first driver for generating a first driving signal, wherein the first driving signal has a maximum voltage smaller than a voltage of inversion of polarization of the piezoelectric element and has a waveform derived from the waveform signal, the first driver being coupled to provide the first driving signal to the piezoelectric element in the polarization direction of the piezoelectric element; and
>
> a second driver for generating a second driving signal, wherein said second driving signal has a maximum voltage smaller than the voltage of inversion of polarization of the piezoelectric element and has a waveform derived from the waveform signal, the second driver being coupled to provide the second driving signal to the piezoelectric element in a direction opposite to the polarization direction.

Thus, the first driving signal is provided in the polarization of the piezoelectric element and the second driving signal is provided in the opposite direction of polarization of the piezoelectric element. The prior art positions the electrodes in diagonally opposite positions such that the electrodes are polarized in opposite positions. However, the Atsuta Patent says nothing concerning the positioning of the electrodes relative to the polarization of the piezoelectric devices. Therefore, the cited prior art does not show or suggest every limitation of claim 1 and does not anticipate claim 1. MPEP §2131. Claims 2 and 5 are dependent upon claim 1 and thus include every limitation of claim 1. Therefore, the cited prior art does not anticipate claims 2 and 5. Thus, claims 1, 2 and 5 are patentably distinct from the cited prior art.

Also in contrast to the cited prior art, claim 17 includes:

> a first driver for applying a first time varying driving signal to the piezoelectric element in a polarization direction thereof; and
>
> a second driver for applying a second time varying driving signal to the piezoelectric element equal to or smaller than a voltage of inversion of

polarization of the piezoelectric element in a direction opposite to the polarization direction.

As noted above, the cited prior art does not show or suggest an orientation of any signal relative to the polarization of the piezoelectric element. Therefore, the cited prior art does not anticipate claim 17. Claim 18 is dependent upon claim 17. Therefore, the cited prior art does not show every limitation of claim 18 and does not anticipate claim 18. Thus, claims 17 and 18 are patentably distinct from the cited prior art.

Also in contrast to the cited prior art, claim 23 includes:

a first driving signal having a maximum voltage smaller than a voltage of inversion of polarization of the piezoelectric element is applied to the piezoelectric element in a polarization direction of the piezoelectric element; and

a second driving signal having the same voltage but the inverted polarization is applied to the piezoelectric element in a direction opposite to the polarization direction of the piezoelectric element.

As noted above, the cited prior art does not show or suggest an orientation of any signal relative to the polarization of the piezoelectric element. Therefore, the cited prior art does not anticipate claim 23. Claim 24 is dependent upon claim 23. Therefore, the cited prior art does not show every limitation of claim 24 and does not anticipate claim 24. Thus, claims 23 and 24 are patentably distinct from the cited prior art.

Accordingly, it is respectfully requested that the rejection of claims 1, 2, 5, 17, 18, 23, and 24 under 35 U.S.C. § 102(102) as being anticipated by the Atsuta Patent, be reconsidered and withdrawn.

35 U.S.C. § 103(a) Rejection

The rejection of claim 6 under 35 U.S.C. § 103(a), as being unpatentable over the Atsuta Patent in view of the Tsukimoto Patent, is respectfully traversed based on the following.

Claim 6 is dependent upon claim 1 and thus includes every limitation of claim 1. As noted above, the Atsuta Patent does not show or suggest an orientation of any signal relative to the polarization of the piezoelectric element. The Tsukimoto Patent shows an arrangement of polarization patterns of the piezoelectric elements in a stack, but does not show or suggest the positioning of any electrode relative to the polarization of the piezoelectric elements. Therefore, the Tsukimoto Patent does not provide the limitations of claim 1 that are missing from the Atsuta patent. To make a *prima facie* case for obviousness of a claim, it must be shown that the combined references show every limitation of the claim. MPEP §2143. Therefore, the cited prior art does not support a *prima facie* case for obviousness of claim 6 and claim 6 is patentably distinct from the cited prior art.

Accordingly, it is respectfully requested that the rejection of claim 6 under 35 U.S.C. § 103(a) as being unpatentable over the Atsuta Patent in view of the Tsukimoto Patent, be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

By: 

Douglas A. Sorensen
Registration No. 31,570
Attorney for Applicant

DAS/mhg:bar:jkk
SIDLEY AUSTIN BROWN & WOOD LLP
717 N. Harwood, Suite 3400
Dallas, Texas 75201
Direct: (214) 981-3482
Main: (214) 981-3300
Facsimile: (214) 981-3400
May 30, 2002

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The following is a marked-up version of the changes to the claims which are being made in the attached response to the Office Action dated March 11, 2002.

IN THE CLAIMS:

23. (Twice Amended) A method for driving an actuator having a piezoelectric element serving as a driving source characterized by [that]:

a first driving signal having a maximum voltage smaller than a voltage of inversion of polarization of the piezoelectric element is applied to the piezoelectric element in a polarization direction of the piezoelectric element; and

a second driving signal having the same voltage but the inverted polarization is applied to the piezoelectric element in a direction opposite to the polarization direction of the piezoelectric element.